

CLAIMS

1. A structure comprising tungsten as a main component and tungsten carbide, wherein the content of carbon is at least 0.1% by mass and the total
5 content of cobalt, nickel, and iron is 3% or less by mass, respectively based on the structure.

2. The structure according to Claim 1, wherein the structure has a Vickers hardness of at least 800.

10 3. The structure according to Claim 1 or 2, wherein the structure has a density of at least 10 g/cm³.

4. The structure according to any of Claims 1 to 3, wherein the structure has
15 a surface roughness of 1 μm or less.

5. The structure according to any of Claims 1 to 4, wherein the structure has an average grain size of 50 nm or less.

20 6. The structure according to any of Claims 1 to 5, wherein the number of pools having a size of at least 5 μm and consisting of at least one element selected from the group consisting of cobalt, nickel, and iron is not more than one per 100 mm² of the surface of the structure.

7. The structure according to any of Claims 1 to 6, wherein the structure has a shape on the order of micrometers.

5 8. A method of manufacturing the structure according to any of Claims 1 to 7, comprising the step of forming the structure by electro-deposition of a molten salt containing at least two elements selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, and barium; at least one element selected from the group consisting
10 of fluorine, chlorine, bromine, and iodine; tungsten; zinc; and an organic compound.

9. The method of manufacturing a structure according to Claim 8, wherein the structure is formed by electro-deposition at the temperature of the molten
15 salt of 300°C or less.

10. The method of manufacturing a structure according to Claim 8 or 9, wherein the organic compound is polyethylene glycol.